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ENTOMOLOGICAL NEWS

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On Melanoplus borealis in Northern Labrador (Orthop.: Acrididae).

By JAMES A. G. REHN, Academy of Natural Sciences, Philadelphia.

My friend Dr. Samuel C. Palmer, of Swarthmore College, while a member of the Bowdoin-Baffinland Expedition of 1929, made a special effort to secure specimens of any Orthoptera encountered in the course of the botanical work on which he was engaged in northern Labrador and southern Baffinland. On his return he placed a small but interesting series in my hands, and I am able to state it represents adults and immature individuals of the boreal *Melanoplus borealis* (Fieber), which has been recorded from Greenland, Hudson Bay and various localities in Labrador, as well as from Alaska and many other localities more to the southward of these areas. Dr. Palmer, at my request, has kindly supplied the following information on the occurrence of the species in the areas studied:

"The grasshoppers in this lot consist of a few specimens collected by myself on the Bowdoin-Baffinland Expedition of 1929 under Captain D. B. MacMillan, with whom I went as botanist. The expedition occupied three months, much of which time was spent in getting to and back again from this northern region. Several efforts were made to secure grasshopper specimens but these were largely unsuccessful. On the north shore of Frobisher Bay in Baffinland there were many grass-covered, well-watered expanses, where grasshoppers could easily feed. I searched a number of these areas but did not see a single grasshopper. We were here from August 19th to August 24th. Flowers were in bloom in these meadows and the grass was fresh and green, indicating that the weather conditions were probably as good as they would probably be at any time. On

August 22nd we moved to the south shore of Frobisher Bay, and came to anchor at the base of a glacier which we called MacMillan Glacier. On the next day we proceeded out the bay to a point where a stream drained a valley which divided the Grinnell Ice Cap. At the outlet of this stream there was a great overwash plain of glacial material. The top of this plain was very level, several acres in extent and was quite grassy. Several species of arctic butterflies were abundant, but I could not find any grasshoppers.

"On our return to Labrador we anchored in a narrow fiord on Cape Mugford. We came into this haven out of a fog-bound sea on August 27th. On both sides rose high hills to about 1,000 feet. There were extensive talus slopes around the bases of these mountains and they spread out into grassy meadows as they neared the sea. Here I found a very few nymphal specimens of *Melanoplus borealis*. They were very inactive and easily caught by hand. Other insects were quite abundant and I caught several.

"Our next stop where an opportunity was offered to collect was at Nain on August 31st. There are numerous grassy places about this town, and two small streams poured their icy waters into the bay. Along the open slopes between these two streams I found a number of adult and nymph forms which at the time I thought were of two species, but which later proved to be but one. Along the grassy banks of the streams I had hoped to find more but was disappointed. The insects apparently preferred the warmer open gently sloping hillsides.

"On our way north I did not see any grasshoppers. The hillsides still held large patches of snow and the nights were cool. On our return in late August the snow had all disappeared, and the warming sun had been strong enough to make existence possible for these few grasshoppers for a short time in late summer."

The Cape Mugford specimens number five, and consist of one immature male and four immature females representing the two instars preceding maturity. Those from Nain number twenty-four, and comprise six adult males, ten adult females,

two immature males and six immature females. The Nain immature specimens are all in the instar preceding maturity except a single female in the next preceding one.

All the adult individuals have well developed tegmina, and in size are similar to material of the species in hand from Prince Edward Island, the Province of Quebec (Bic), northern Indiana (Fulton and Marshall Counties), northern Michigan (Pequaming), and Field, British Columbia, but appreciably smaller than specimens from a number of the Magdalen Islands and Isle Royale in Lake Superior. The material collected was presented by Dr. Palmer to the Academy of Natural Sciences of Philadelphia.

While the species has been reported from Nain, Rama and some other Labrador localities, it is desirable to place on record all possible habitat information bearing on the life of infrequently studied arctic environments.

Typha Insects and their Parasites.

By A. C. Cole, Jr.
Ohio State University, Columbus.

(Continued from page 11)

Diptera & Parasites.

(30) Platychirus quadratus Say. Four larvae of this species were collected at Monroe, Michigan, on June 19, 1927. All of them pupated on June 27 and three emerged on July 3, 1927. They were reared from overwintering heads of *Typha latifolia*.

(31) Chaetopsis aenea Will. Numerous individuals were collected in the larval stage in all localities previously mentioned. The larvae were found in the moist portion of *Typha latifolia* stalks, usually in the burrows of Lepidopterous feeders. The adults were determined by Dr. J. M. Aldrich.

(32) Macrosargus clavis Wied. Three larvae were collected from leaves of *Typha latifolia* at Monroe, Michigan, July 31, 1927. From additional larvae two species of parasites were reared: (33) *Diaulinus pulchripes* Cwfd., determined by A. B. Gahan, and (34) *Tumidiscapus sp.*, determined by A. B. Cushman.

(35) DROSOPHILA sp. One female emerged from a stalk of *Typha latifolia* at Monroe, Michigan, on July 31, 1927. The specimen was determined by Dr. J. M. Aldrich.

(36) ELACHIPTERA NIGRICEPS Loew. Two adults emerged from a stalk of *Typha latifolia* at Monroe, Michigan, on August 6, 1927. These specimens were determined by Dr. C. T. Greene.

(37) CORODONTA DORSALIS Lw. Seven adults were reared from larvae in *Typha latifolia* stalks at Monroe, Michigan. Three specimens were determined by Dr. C. T. Greene. One parasitized larva was collected on the same date from which emerged three undeterminable Chalcids on August 17, 1927.

(38) APHIOCHAETA CHAETONEURA Mall. One specimen was reared from a larva collected from a tunnel of *Archanara subcarnea* Kell., at Monroe, Michigan, on August 16, 1928.

COLEOPTERA.

(39) CALENDRA PERTINAX Oliv. The larvae of this insect bore in the stalk on or near the surface of the ground. Three specimens were reared from *Typha latifolia* at Monroe, Michigan on July 6, 1927.

(40) MONONYCHUS VULPECULUS Fab. Larvae of this species were found feeding on the heads of *Typha latifolia* at Monroe, Michigan, on July 12, 1927. The adults were determined by Dr. E. A. Chapin.

(41) PARIA CANELLA var. ATERIMA Oliv. The larvae were found in the leaf-sheaths of *Typha latifolia* at Monroe, Michigan, on May 26, 1928. Three individuals, two males and one female, were determined by Dr. E. A. Chapin.

(42) NOTARIS PUNCTICOLLIS Lec. This insect is reported by W. A. Hoffman (1915) as burrowing in the stems of *Typha latifolia*. "The burrow appears very much the same as that of *Calendra pertinax* Oliv." (Claassen). One adult was reared at Monroe, Michigan, on September 2, 1928.

HYMENOPTERA.

(43) EURYTOMA BICOLOR Walsh. The larvae of this insect were found in galls in the stems of dry, overwintered *Typha latifolia*. The larvae were collected at Monroe, Michigan, on April 23, 1927, pupated by April 26, and emerged by August 7.

Fresh stalks of *Typha* at various localities near Monroe were examined in June, July, August, and September of the same year and no trace of the insect was found in the new growth. It seems that they are either periodical or that they have an alternate host.

Specimens of this insect were determined by Dr. A. B. Gahan.

HEMIPTERA.

(44) ISCHNORHYNCHUS RESEDAE Panz. Specimens of this insect were collected at Monroe, Michigan, (1927) in the 3rd, 4th, and 5th nymphal stages, being more abundant however, in the third. They were taken from the moist petioles of *Typha latifolia.*

(45) SIPHOCORYNE NYMPHACAE Linn. Reported by Claassen. These insects are found on the surface of the leaves from the sheath to the tip of the leaf.

(46) APHIS AVENAE Fab. Reported by Claassen. This species is found "behind the sheaths of the leaves, in the gelatinous material below the surface of the water in which the plants are growing."

(47) RHOPALOSIPHUM DIANTHI Schrank. Reported on cattail by Sanborn (1906).

(48) RHOPALOSIPHUM PERSICAE Sulz. Reported on *T. latifolia* and *angustifolia* by Wilson and Vickery (1918).

(49) APHIS GOSSYPII Glov. Reported on *Typha latifolia* by Davidson (1917) (8).

(50) MACROSIPHUM GRANARIUM Kirby. Reported by Davidson (1917).

(51) HYALOPTERUS ARUNDINIS Fab. Reported by Davidson (1917).

ORTHOPTERA AND PARASITES.

(52) CONOCEPHALUS sp. Several specimens were collected in the egg stage at Monroe, Michigan (1927-1928) in overwintering stalks of *Typha latifolia.* They were found imbedded between the pith and the epidermis of the stalk. Three adults were determined by A. N. Caudell. Two species of parasites emerged from eggs: (53) *Macroteleia* sp., and (54) *Tumidiscapus* sp., both determined by Dr. A. B. Gahan.

(55) CONOCEPHALUS sp. Similar to the above but with egg deposition restricted to certain areas of the stalk.

THYSANOPTERA.

(56) THRIPSAPHIS BALLII Gill. Adults were collected from moist petioles of *Typha latifolia* at Monroe, Michigan, on July 24, 1927, and were determined by P. W. Mason.

Insects infesting *Typha* may be classified according to their location in the various areas of the plant itself. Such a classification follows. The number following each name is that under which it appears in the preceding list.

INSECTS INFESTING THE ROOTS.

Calendra pertinax Oliv. (39). *Notaris puncticollis* Lec. (42).

INSECTS INFESTING THE STEMS.

Coleophora sp. (16).
Nonagria oblonga Grote. (17).
Cacoecia rosaceana Harr.
Archanara subcarnea Kell. (20) (25).
Chaetopsis aenea Wied. (31).
Drosophila sp. (35).
Elachiptera nigriceps Loew. (36).
Corodonta dorsalis Lw. (37).
Aphiochaeta chaetoneura Mall. (38).
Calendra pertinax Oliv. (39).
Notaris puncticollis Lec. (42).
Eurytoma bicolor Walsh. (43).
Conocephalus sp. (52).
Conocephalus sp. (55).

INSECTS INFESTING THE LEAVES.

Arsilonche albovenosa Goeze. (1).
Apatela oblinta A. & S. (9).
Nonagria subflava Grote. (19).
Unidentified Lepidopteron (26).
Macrosargus clavis Wied. (32).
Paria canella var. atterima Oliv. (41).
Ischnorhynchus resedae Panz. (44).
Siphocoryne nymphaeae Linn. (45).
Aphis avenae Fab. (46).
Rhopaolosiphum dianthi Schrank (47).
Rhopalosiphum persicae Sulz. (48).
Aphis gossypii Glov. (49).
Macrosiphum granarium Kirby (50).
Hyalopterus arundinis Fab. (51).
Thripsaphis ballii Gill. (56).

INSECTS INFESTING THE HEADS.

Endothaenia hebesana Wlk. (12).
Lymnaecia phragmitella Staint. (14).
Bactra maiorina Hein. (24).
Archips obsoletana Walk. (28).
Dicymolomia julfanalis Walk. (29).
Platychirus quadratus Say (30).
Mononychus vulpeculus Fab. (40).

INSECT PARASITES.

Blacus sp. (2) ex *Arsilonche albovenosa* Goeze.
Microbracon sp. (3) ex *Arsilonche albovenosa* Goeze.
Macrocentrus ancylivora Roh. (4) ex *Arsilonche albovenosa* Goeze.
Pimpla inquisitoriella D. T. (5) ex *Arsilonche albovenosa* Goeze.
Rogas stigmator Say (6) ex *Arsilonche albovenosa* Goeze.
Exorista larvarum L. (7) ex *Arsilonche albovenosa* Goeze.
Aleiodes intermedius Cress. (8) ex *Arsilonche albovenosa* Goeze.

Sceliphron caementarium Drury (10) ex *Apatela oblinita* A. & S.
Casinaria genuina Nort. (11) ex *Apatela oblinita* A. & S.
Microbracon sp. (13) ex *Endothaenia hebesana* Wlk.
Apanteles cinctiformis Vier. (18) ex *Nonagria oblonga* Grote.
Muscina stabulans Fall. (21) ex *Archanara subcarnea* Kell.
Masicera senilis Rond. (22) ex *Archanara subcarnea* Kell.
Sturmia nigrita Town. (23) ex *Arazama obliqua* Walk.
Eulophus sp. (27) ex an unidentified Lepidopteron.
Diaulinus pulchripes Cwfd. (33) ex *Cryptochaetum* sp.
Tumidiscapus sp. (34) ex *Cryptochaetum* sp.
Elachterinae sp. (45) ex *Lymnaecia phragmitella* Staint.
Macroteleia sp. (53) ex *Conocephalus* sp.
Tumidiscapus sp. (54) ex *Conocephalus* sp.

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Notes on Utah Heteroptera and Homoptera.[1]

By GEORGE F. KNOWLTON.

Much insect material has reposed in the Utah Agricultural Experiment Station and Utah State Agricultural College collections, but only a small portion of this material has been classified and recorded. An effort is being made to gradually build up this collection and get as much of the material named as is possible, so that it will become of assistance in the recognition of local insects. This paper records some of the material that has been determined in the past few years.

The writer is indebted to Messrs. Herbert Osborn, W. L. McAtee, H. H. Knight, H. B. Hungerford, William T. Davis, and R. H. Beamer, for naming much of the material herein recorded.

Order HETEROPTERA Linn.

Family SCUTELLERIDAE (Leach).

1. HOMAEMUS AENEIFRONS (Say). Peterson, September 14, 1925 (Knowlton).
2. HOMAEMUS BIJUGIS Uhl. Providence, August 10, 1930 (M. J. Janes).
3. EURYGASTER ALTERNATUS (Say). Logan, May 17, 1923 (Knowlton); Providence, June 8, 1930 (M. J. Janes).

Family CYDNIDAE (Billberg).

4. HOMALOPORUS CONGRUUS Uhl. Panguitch, July 29, 1928 (Knowlton).

Family PENTATOMIDAE (Leach).

5. BRACHYMENA 4-PUSTULATA (Fabr.). Evans, May 13, 1930 (Knowlton); Farmington, July 16, 1930 (M. J. Janes); Hinckley, July 23, 1914 (Pack).
6. PERIBALUS LIMBOLARIUS Stal. Draper, June 23, 1926 (Knowlton); Farmington, July 16, 1930 (M. J. Janes); on beets at Hooper, August 24, 1929 (Knowlton); on ragweed at Logan, August 15, 1926 (Knowlton).
7. TRICHOPEPLA ATRICORNIS Stal. Cedar, July 25, 1926 (Knowlton).
8. RHYTIDOLOMIA FACETA (Say). Richfield, August 7, 1924 (Knowlton).

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[1] Contribution from the Department of Entomology, Utah Agricultural Experiment Station.
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9. CHLOROCHROA UHLERI Stal. Curlew, August 30, 1929 (Knowlton); Elberta, August 7, 1929 (Knowlton); on clover, Garland, August 12, 1929 (Pack); on *Gutierrezia*, Logan, October 4, 1929 (Knowlton); Schowell, October 14, 1929 (Knowlton).

10. C. CONGRUA Uhl. On beets at Benjamin, August 26, 1929 (Knowlton); Cache Junction, June 12, 1929 (Knowlton); Farmington, July 16, 1930 (Knowlton and M. J. Janes); on beets at Far West, August 17, 1930 (Knowlton); Nephi, July 23, 1915 (Ball); on beets at Spanish Fork, July 9, 1930 (Knowlton); Stansbury Island, June 13, 1913 (Pack, Hagan, Titus).

11. C. LIGATA (Say). Logan, May 21, 1908 (J. B. Horton).

12. C. SAYI Stal. Farmington, July 23, 1930 (M. J. Janes); Layton, July 5, 1930 (Knowlton); on wheat at Promontory, September 10, 1929 (Knowlton); damaging wheat in Round Valley, near Salina, August, 1930 (Knowlton).

13. CARPOCORIS REMOTUS Horv. On alfalfa, Lewiston, August 13, 1929 (Pack).

14. EUSCHISTUS SERVUS (Say). Logan, September 2, 1903; Logan Canyon, August 15, 1912 (Hagan); on beets at North Ogden, June 7, 1929 (Knowlton).

15. E. INFLATUS Van D. On potatoes at Farmington, July 16, 1930 (M. J. Janes) and July 20, 1930 (Knowlton).

16. E. VARIOLARIUS (P. B.). Farmington, June 11, 1930 (Knowlton and Janes); Provo, August 10, 1930 (M. J. Janes); numerous on beets at Spanish Fork, August 20, 1929 (Knowlton).

17. NEOTTIGLOSSA UNDATA (Say). Logan.

18. COSMOPEPLA BIMACULATA (Thom.). Logan, May 26, 1909.

19. THYANTA PERDITOR (Fabr.) Nephi, July 23, 1905 (Ball).

20. T. CUSTATOR (Fabr.). On sugar-beets at Farmington, October 9, 1929 (Knowlton); Grantsville, August 27, 1929; on *Gutierrezia* in Logan Canyon, October 4, 1929 (Knowlton); on beets at Penrose, September 28, 1929 (Knowlton); on alfalfa at Providence, June 8, 1930 (M. J. Janes); Mantua, July 27, 1925 (Knowlton).

21. T. RUGULOSA (Say). On *Atriplex* at Locomotive Springs, June 9, 1930 (Knowlton).

22. T. PUNCTIVENTRIS Van D. Logan, August 24, 1909 (Hoff).

23. BANASA SORDIDA (Uhl.). Brigham City, September 25, 1916.

24. PERILLUS BIOCULATUS var. CLANDA (Say). Blue Creek, July 18, 1930 (Knowlton).

25. PODISUS BRACTEATUS F. R. Logan, September 26, 1909.

Family COREIDAE (Leach).

26. ANASA TRISTIS (De Geer). The squash bug is commonly destructive to squash in Davis and Weber Counties and parts of Utah and Cache Counties. During the winter of 1929-30 adult specimens kept in the Experiment Station insectary at Logan had a 45 per cent mortality. Damage during the summer of 1930 was ordinarily severe, with numerous reports of damage being received at the Experiment Station.

27. MEGALOTOMUS 5-SPINOSUS (Say). Logan, May 21, 1908 (Horton) and July 4, 1923 (Knowlton).

28. HARMOSTES REFLEXULUS (Say). Iosepa, July 17, 1926 (Knowlton).

29. CORIZUS HYALINUS (Fabr.). Richmond, September 1, 1926 (Knowlton).

30. CORIZUS VIRIDICATUS Uhl. Corinne, June 22, 1929 (Knowlton and Bowen).

31. CORIZUS CRASSICORNIS (Linn.). Logan Meadows, July, 1928 (Knowlton).

32. LEPTOCORIS TRIVITTATUS (Say). The boxelder bug is a common house pest in northern Utah and collects in large numbers on the sunny south side of buildings during warm spring afternoons. Frequent inquiries are received at the Experiment Station regarding this pest.

Family NEIDIDAE (Kirkaldy).

33. NEIDES MUTICUS (Say). Point of the Mountain, South of Salt Lake City, July 20, 1909 (Titus).

Family LYGAEIDAE (Schilling).

34. LYGAEUS RECLIVATUS Say. Low, September 19, 1930 (Knowlton).

35. L. KALMII Stal. Dry Lake, July 31, 1926 (Knowlton); Logan, June 10, 1926 (Knowlton); Promontory, April 18, 1929 (Knowlton); Salt Lake City, June 23, 1927 (Knowlton); Snowville, April 16, 1929 (Knowlton); Stansbury Island, June 13, 1913 (Pack, Hagan, Titus).

36. NYSIUS CALIFORNICUS Stal. Cisco, August 7, 1906; Joseph, August 6, 1907 (Titus).

37. N. ERICAE (Schilling). The false chinch bug is abundant and widespread in Utah and at times causes damage to sugar-beets, grains, and alfalfa. The nymphs and adults appear early in the spring, as soon as the ground warms up.

38. GEOCORIS BULLATUS (Say). Logan, September 28, 1922 (Knowlton); Milford, July 21, 1926 (Knowlton).

39. G. PALLENS Stal. Magna, May, 1927 (Knowlton).

40. G. PALLENS var. *decoratus* Uhl. Timpie, July 17, 1927 (Knowlton). Adults and nymphs of *Geocoris* sp. are commonly found in the stomachs of lizards (*Uta stansburiana stansburiana* B. and G.) collected in northern Utah on deserted dry-farms and Russian thistle patches.

Family TINGIDIDAE (Laporte).

41. PIESMA CINEREA (Say). On sugar-beets at Collinston, July 21, 1927 (Knowlton).

42. CORYTHUCHA HISPIDA Uhler. Stansbury Island, June 13, 1913 (Pack, Hagan, Titus).

Family PHYMATIDAE (Laporte).

43. PHYMATA EROSA (Linn.). Logan, August, 1929 (Knowlton).

44. P. EROSA subsp. FASCIATA (Gray). Brigham City, September 10, 1925 (Knowlton); Logan, August, 1929 (Knowlton); Spring Canyon, August 28, 1925 (Knowlton).

Family REDUVIIDAE (Latreille).

45. APIOMERUS CRASSIPES (Fabr.). Cedar Spring, June, 1930 (Knowlton); Logan, July 4, 1907 (Titus).

46. TRIATOMA PROTRACTA (Uhler). Logan, September 14, 1928 (Knowlton).

47. ZELUS SOCIUS Uhl. Skull Valley, August, 1929 (Knowlton); Snowville, July, 1929 (Knowlton).

48. SINEA DIADEMA (Fabr.). Draper, August, 1925 (Knowlton); Ogden, July, 1929 (Knowlton).

49. S. CONFUSA Caud. Spring Canyon, August 28, 1925 (Knowlton).

Family NABIDAE (Costa).

50. NABIS FERUS (Linn.). Delta, July 15, 1926 (Knowlton); Lewiston, July, 1926 (Knowlton); Promontory, October, 1929 (Knowlton); Snowville, August, 1929 (Knowlton). Fairly common in northern Utah, in the breeding grounds of the beet leafhopper.

Family CIMICIDAE (Latreille).

51. CIMEX LECTULARIUS Linn. The bedbug was abundant in a chicken coop at Logan, July 28, 1924 (Hawley and Knowlton). Reports of infestations and requests for advice on control in houses are frequently received. To keep free from this pest many apartment houses fumigate frequently.

(To be continued).

Recapture of Marked Cutworm Moths in a Trap Lantern (Lep.: Noctuidae).

By A. E. Brower, Ithaca, New York.

During the summer of 1929 a study of the movement of moths, by marking individuals of species of the genus *Catocala* (Noctuidae) was carried out. The results were reported in Ent. News, Vol. 41:10-15, 44-46, 1930. In the summer of 1930 a trial experiment was made at Cornell University, in connection with the operation of the trap lantern, to determine the feasibility of obtaining data upon the movements of Noctuidae attracted by light. Despite the preliminary nature of the work the unexpected results seem worthy of publication.

The trap lantern is located in a secluded situation near the ground between a large outdoor rearing cage and a strip of timber. The light used was a 50 watt electric lamp. In marking the moths each specimen was grasped firmly near the base of the wings on one side with a pair of curve-pointed forceps and a finger supplied for them to cling to. Lacquers were used for marking as they become very gummy and quick drying if left open to the air for a few hours. A different mark was used for each night's catch. Colors were changed as often as necessary to secure simple marks or combinations of marks. Each moth was placed in a container as soon as marked.

The catch of four nights was taken about three-eighths of a mile southeast of the trap and released in a growth of weeds and grass beside an overgrown fence row. One night's catch, the second, was tossed out in the grass close to the trap lantern, marking being discontinued and the light turned off at 12:15. The catches of the eight subsequent nights were carried about three-eighths of a mile west of the trap; if this was done about midnight the moths were released under an electric light, but if it was in the morning they were released in a strip of natural trees and bushes. In both cases the plan was to have a number of buildings of the College of Agriculture and several electric lights intervening between the point of release and the trap lantern. Marked moths which returned were again carried away with those caught the same night without remarking them.

As may be seen in the list of recaptured moths, "recaptures" were secured as follows; after eight days, four moths; nine days, three; ten days, two; and twelve days, one. Besides,

many other specimens were recaptured after shorter periods. Of these ten moths which were retaken after a period of eight or more days, three had been carried southeast of the trap, two had been released at the trap, and five had been carried west from the trap. It is significant that marked moths were retaken every night after the second night and marked moths from each night's catch except two were recaptured. The failure to recapture any moths from these two nights was probably due to the small numbers marked on these nights with the premature closing of the experiment by cold nights.

One thousand moths were marked in this experiment. Ten moths, or 1%, were recaptured at the trap after a period of eight or more days, the longest period being twelve days. The percentage of recaptures was slightly higher from moths carried southeast of the trap compared with those carried west of the trap. Those released at the trap were recaptured in comparatively large numbers. This experiment so far as it goes indicates that cutworm moths range about freely in an area within a radius of three-eighths mile; only future experiments can show how much farther. The recapture of twenty moths from the catch released at the trap might be expected, but it seems extraordinary that so many of these, carried away to a considerable distance beyond buildings and released where lights could be seen in every direction, should return to a more or less secluded trap lantern.

TABLE SHOWING THE NUMBER OF EACH SPECIES MARKED EACH NIGHT AND IN PARENTHESIS THE NUMBER RECOVERED ON SUBSEQUENT DATES.

							AUGUST									
Time, p.m. — a.m.	17	— 17	— 19	— 19	— 21	22	22 — 23	23 — 24	24 — 25	25 — 26	26 — 7	27 — 28	28 — 0	29 — 30	30	
Feltia ducens & jaculifera	33 (2)	46 (15)	24	61 (1)	30 (4)	25	48 (2)	Too cold and stormy		71 (2)	54 (3)	44 (1)	38	46	13	Total 533 (30)
Noctua c-nigrum		5	5	2 (1)	13 (1)	7	12			11 (1)	13	8	2	2	1	81 (3)
N. normaniana					3	2	5			4	3	3	1	2		23
N. baja smithii		5 (2)	4	5	10	14 (2)	26 (1)			23	17	34 (2)	19 (1)	14 (1)	3	174 (9)
Agroperina dubitans	4	3 (2)	11	11	13	11	25			20	12 (1)	15 (1)	2	9 (1)	1	137 (5)
A. helva	3	3 (1)	8	2	5	5	6 (2)			3	4	9 (1)		4		52 (4)
Total ...	40 (2)	*62 (20)	52 (0)	81 (2)	74 (5)	64 (2)	122 (5)			132 (3)	103 (4)	113 (5)	62 (1)	77 (2)	18 (0)	1000 (51)

Part of the moths were marked at midnight and part of them in the morning. Since a night includes portions of two days, each night's work is indicated by two dates. A dash indicates operation of trap but no moths marked at midnight. A zero shows that the trap was not operated after midnight.

* This night's catch of moths was liberated near the trap.

LIST OF RECAPTURED MOTHS.

FELTIA DUCENS AND JACULIFERA

Date of marking	Date of recapture	No. recaptured
Aug. 17 P.M.	19 A.M.	4
17 P.M.	19 P.M.	5
17 P.M.	21 A.M.	3
19 P.M.	21 A.M.	1
21 A.M.	22 A.M.	1
17 A.M.	25—26 (9 days)	2
17 P.M.	25—26 (8 days)	2
21 A.M.	26—27	2
22—23	26—27	1
21 A.M.	28 P.M. (8 days)	1
26—27	29—30	2
25—26	29—30	1
17 P.M.	29—30 (12 days)	1
22—23	30—31 (8 days)	1
27—28	30—31	1
25—26	30—31	1
26—27	31— Sept. 1 (10 days)	1

NOCTUA C-NIGRUM

Aug. 21 A.M.	22—23	1
25—26	26—27	1
19 P.M.	29—30 (10 days)	1

Date of marking	Date of recapture	No. recaptured
N. BAJA SMITHII		
Aug. 17 P.M.	21 A.M.	2
22 A.M.	27—28	1
22 A.M.	31— Sept. 1 (10 days)	1
22—23	31— Sept. 1 (9 days)	1
27—28	1— Sept.	2
28 P.M.	2— Sept.	1
29—30	2— Sept.	1
AGROPERINA DUBITANS		
Aug. 17 P.M.	19 A.M.	2
26—27	27—28	1
27—28	31— Sept. 1	1
29—30	2— Sept.	1
A. HELVA		
Aug. 17 P.M.	19 P.M.	1
22—23	25—26	1
22—23	26—27	1
27—28	29—30	1

Common Names for Dragonflies (Odonata).

By E. B. WILLIAMSON, Museum of Zoology, Ann Arbor, Michigan.

The usefulness of common names for insects depends on circumstances which are not the same in all orders or subgroups. A decision in any specific case, therefore, rests largely with the specialists concerned. So in discussing the value of

common names for dragonflies, I am not trying to define any general rules for the selection or use of common names for other insects but I shall undertake a discussion of some common names for dragonflies, attempting to determine how useful these names are, or may be, and whether or not they are appropriate. Common names are essentially more or less local names which find the barriers of language insurmountable so I shall confine myself still farther to the common names of North American dragonflies. Such a discussion seems particularly needed at this time. Professor Needham in his recent Handbook of North American Dragonflies has proposed some common names and in the same volume has used names of earlier vintage. A second printing of the Handbook is promised and before that is done it seems desirable to frankly discuss this matter of common names for North American dragonflies. In most schools the Handbook will be the only book on dragonflies available to the general student body for an indefinite period, and in many general and private libraries the casual student will find it his only source of detailed information on the subject. It will profoundly influence dragonfly work in North America over a long period, so its methods and probable effects are of interest to every student.

Let us now take up these common names in detail. Quotations are all from the Handbook. The insects of the order Odonata are now pretty generally known as Dragonflies. Mosquito Hawks, Snakefeeders, and Snakedoctors are some of the other more local names which cause no confusion and are, I think, never misused or misunderstood. In the past the matter of common names stood thus for many years without confusion and without any inconvenience to anybody. But into this peaceful scene was injected the name "Damselfly" for the Zygoptera, one of the suborders of the Odonata. This name was not a folk name anywhere for the Zygoptera. It was a suggested use of the name which was, I think, too readily accepted and for about thirty years has been used without a proper understanding in this connection of the use of the common name "Dragonfly". For example, "the two principal groups of dragonflies that make up the order Odonata are Dragonflies proper and Damselflies". But nowhere in odonate

literature so far as I can recall is any reference in the text to "dragonflies proper", and later on in the Handbook the "Suborder Anisoptera" equals "Dragonflies" without any qualification. Examples of resulting ambiguity are many. "There are more prosaic ways of getting dragonflies. . . . Small dragonflies and damselflies that sit on the low grasses . . ." In the first line of the paragraph from which this is quoted dragonflies equals Odonata, and in the fourth line equals Anisoptera. "They all eat other smaller dragonflies." "Dusk-flying and shade dwelling dragonflies run to somber browns." The "Skimmers" "are the commonest and best known of dragonflies". And under Nannothemis, "These are the smallest of our dragonflies". "Neoneura . . . are slender damselflies"; "Hesperagrion . . . are small . . . damselflies"; but "Zonagrion are slender dragonflies". For thirty years this is the ambiguity throughout odonate literature for which the word "damselflies" is responsible. It has been thus used only by those who have come directly or indirectly in contact with colleges, it was never a folk name, and it may well stand as a warning sign against the hasty coining or new application of common names. I know of students, in two institutions who, when told to collect dragonflies (Odonata), collected only "dragonflies proper" (Anisoptera) during an entire summer. As they were novices with an insect net the results were not happy.

In the Handbook, four families are discussed. A common name for only one of these is suggested, Libellulidae, "The Skimmers". But the Subfamily Libellulinae are called the "Common Skimmers", and the species of the genus Libellula are again, like the Libellulidae, only "The Skimmers", a situation with endless possibilities for confusion. Of the nine subfamilies, common names are proposed for four. Lestinae and Coenagrioninae are not named but the much less frequently observed Macrominae are called "The Belted Skimmers", though no genus or species in the subfamily is named. The larger subfamily in both genera and species, the Cordulinae, in which two genera have common names, is not named. Of the seventy-five genera, sixteen are named. Of these sixteen genera, eleven have no species with a common name, and five genera among them have nine named species. Certainly in the eleven, if not

in all, the inevitable result will be that the generic name will be used specifically in different localities for different species, making chaos certain. The rarely observed Cordulegasters, the single genus in the unnamed Cordulegasterinae, are "The Biddies" from a habit of the nymphs when disturbed. Tetragoneurias with no species named are "Dog-tails" or "Wags". Why there should be two common names for insects so rarely observed and only rarely conspicuous is not clear. And the Enallagmas, also without a named species, are the "Bluets, etc.". But I cannot see just why. And the beautiful insects, beautifully named Tramea, become "The Raggedy Skimmers". Why certain genera such as Celithemis, Pantala, Lestes, Argia, and others, in the light of those named, remained unnamed is not clear.

Of the three hundred and sixty species in the Handbook, twenty-two are named. Two of these are among the rarest of all North American dragonflies, certainly hardly fifty specimens of the two together having ever been taken. At least ten of them are either rare or local, or both. Two Aeshnas are named. Based on the material studied by Walker, there are four unnamed species commoner than one of these, and nine of the other. *Coryphaeschna ingens* is named but the much more widely known, or at least seen, *Epiaeschna heros* is not. The rarely seen *Nannothemis bella* is named the "Blue Bell", and the very abundant *Pachydiplax longipennis* is called the "Blue Pirate", though neither is blue as that term is used for Odonata. Since there is the single species in each genus it would seem the generic names would serve as splendid common names. Of the one hundred and four species of Coenagrionidae, including the most abundant species of dragonflies in North America, only two are named, while the very rare two species of Petalurinae are both named. And of the two Coenagrionidae named, one is one of the rarer Argias, and the other *Telebasis salva*, "The Flapper," has the distribution given as California, truly not a menace to the country at large. The commonest and most widely distributed aeshnine in North America, *Anax junius*, is not named, but the rare and local *Anax walsinghami* is. In other words I am neither satisfied with the list of species selected for naming nor pleased with the common names used.

And I am fully persuaded that any list I might select and the names I might propose would meet with as little general approval.

Over a long period of years I have enjoyed the companionship on collecting trips of many good and unselfish friends for whose enthusiastic help I have no words to express my appreciation. Most of these men have had no connection with colleges, yet in the field and visiting together long winter evenings we have a common vocabulary for all the dragonflies we know. And this vocabulary is understandable in every continent. I think we shall make no change. But if there must be common names by edict, would it not be well to go slowly and after some discussion of each proposal so that the feeble-minded and tongue-tied student of the future, reared entirely on a diet of common names, may have bequeathed to him a nomenclator vulgaris as exact, appropriate and euphonious as possible? Of course there will always be students whose work will require some knowledge of a more universal nomenclature but that will just be their hard luck.

The Meloidae of South Dakota (Coleoptera).[1]

By LAURENCE A. CARRUTH, South Dakota State College, Brookings.

This paper is based on a collection of 963 labeled Meloids in the Entomology-Zoology department of the South Dakota State College. These insects include thirty species in ten genera and were taken at eighty-one places in forty-five of the sixty-three counties of the State. Every section of the State is well represented. The insects were taken mainly by persons associated at one time or another with the Entomology-Zoology department of the College.[2] A number of specimens, including practically all those in the following list that are without date or collector's data, were included in the collection of the late P. C. Truman of Volga, South Dakota, which was purchased by the State College in 1910 or thereabouts. A large number of

[1] Contribution from the Entomology-Zoology Department of the South Dakota State College, Brookings, So. Dak.

The writer gratefully acknowledges the assistance given by Professors H. C. Severin and G. I. Gilbertson of the South Dakota State College, and by Mr. H. S. Barber of the United States National Museum.

Meloids, including several species not before reported in the State, have accumulated during the past few years as a result of extensive collecting trips made by members of the college Entomology-Zoology department. These insects were not classified or tabulated until recently when the work was undertaken by the writer.

The collection at the South Dakota State College is the only one known to contain a representative group of South Dakota Meloidae. Since the data given in this paper greatly extend the ranges of some species over those previously published, and since practically no published reports are available on the Meloidae of adjoining states, it is believed that this report will be of interest.

In the following notes the subfamilies and genera are arranged in the order given by Van Dyke.[3] Each species is prefixed by the serial number given in Leng's "Catalog of the Coleoptera of North America North of Mexico." "Sp." below stands for specimen or specimens.

Subfamily MELOINAE.

1. (7973) PYROTA ENGELMANNI Lec. Chamberlain, 1 sp. June 15, 1928; Parmelee, 3 sp. June 18, 1927; Rosebud, 1 sp. June 23, 1924; all by (G.I.G.). Wewela, 1 sp. June 19, 1930 (L.A.C.). White River, 1 sp. June 18, 1927, 1 sp. June 15, 1929, (H.C.S.). Chester, 2 sp. June 15, 1930, (G.B.S.).

2. (7980) P. DAKOTANA Wick. Nowlin, 1 sp. June 25, 1928, (H.C.S.). Philip, 11 sp. June 23, 1923, (G.I.G.). Pierre, 4 sp., no data. The Pierre specimens, acquired from the Truman collection, are probably cotypes.

3. (7998) EPICAUTA TRICHRUS Pall. Chester, 3 sp. June 21, 1930, on sweet william (*Phlox pilosa*), (G.B.S.). Elk Point, 2 sp. June 19, 1924; Florence (Medicine Lake), 1 sp. June 23, 1927; all by (G.I.G.). Brookings, 5 sp.; Hot Springs, 1 sp.; Volga, 2 sp.; all no data.

4. (8004) E. FERRUGINEA Say. Brule Agency, 1 sp. Aug. 23, 1929; Buffalo, 1 sp. Sep. 9, 1927; Chamberlain, 2 sp. June 15, 1928; Eureka, 16 sp. Sept. 5, 1930; Forestburg, 1 sp. Aug.

[2] In the following report, the collectors, where known, are indicated by their initials. These persons are thus represented: L. A. C., Laurence A. Carruth; M. F., Morton Fredricksen; G. I. G., George I. Gilbertson; P. H. J., Paul H. Johnson; L. C. L., L. C. Lippert; M. K. R., Merrill K. Riley; J. A. S., J. A. Salisbury; H. C. S., Harry C. Severin; G. B. S., Gerald B. Spawn.

[3] Univ. of Cal. Publications in Entomology, Vol. 4, No. 12, pp. 404-405, 1928.

21, 1929; Grass Rope, 6 sp. Aug. 23, 1929; Howell, 14 sp. Sep. 5, 1930; Kadoka (Bad Lands), 3 sp. Aug. 25, 1929; McNeely, 1 sp. Sep. 17, 1930; Miranda, 9 sp. Sep. 5, 1930; Pierre, 1 sp. Aug. 22, 1927; Smithwick, 3 sp. Sep. 15, 1930; White Lake, 13 sp. Aug. 23, 1929; all by G.I.G. Capa, 6 sp. Aug. 12, 1919, 5 sp. Aug. 24, 1922; Orman Dam, 1 sp. Sep. 10, 1929; all by H.C.S. Aurora Co., 4 sp., no data.

5. (8005) E. SERICANS Lec. Buffalo, 4 sp. June 20, 1926; Chamberlain, 9 sp. June 15, 1928; Hot Springs, 4 sp. June 26, 1924, 1 sp. Sep. 6, 1923; Newell, 3 sp. June 29, 1923; Philip, 4 sp. June 23, 1923, Tulare, 1 sp. July 13, 1928; White Lake, 2 sp. Aug. 23, 1923; Whitewood, 1 sp. June 21, 1926; all by G.I.G. Capa, 3 sp. Aug. 24, 1922; Nowlin, 1 sp. June 25, 1928; all by H.C.S. Pierre, 1 sp., no data.

6. (8007) E. CALLOSA Lec. Chamberlain, 3 sp. June 15, 1928; Newell, 1 sp. June 29, 1923, 8 sp. July 5, 1923, 11 sp. Aug. 19, 1924; all by G.I.G. Capa, 8 sp. Aug. 24, 1922 (H.C.S.); Ipswich, 1 sp. July 29, 1929; Pierre, 5 sp.; Nowlin Co.,[4] 5 sp.; all no further data.

7. (8017) E. MACULATA Say. Brule Agency, 1 sp. Aug 23, 1927; Cheyenne Agency, 1 sp. July 14, 1928; Grass Rope, 5 sp. June 19, 1929; Herried, 8 sp. June 15, 1929; Orman Dam, 2 sp. July 17, 1928; Philip, 3 sp. June 23, 1923; Wall, 1 sp. June 24, 1921; all by G.I.G. Brookings, 9 sp. June 13, 1911, Capa, 5 sp. Aug. 24, 1922; Cave Hills, 1 sp. July 22, 1928; Lemmon, 1 sp. Aug. 24, 1924; all by H.C.S. Owanka, 11 sp. found on red root (*Ceanothus ovatus*) and on garden vegetables, July 14, 1930; Parmelee, 1 sp. June 20, 1930; White River, 14 sp. found damaging garden vegetables, July 14, 1930; all by L.A.C. Nowlin Co.,[4] 14 sp.; Slim Buttes, 2 sp.; Volga, 10 sp.; all no further data.

8. (8019) E. LEMNISCATA Fab. Canton, 6 sp. Aug. 3, 1922, (H.C.S.) Springfield, 1 sp. Aug. 27, 1926; Tyndall, 1 sp. Aug. 27, 1929; all by G.I.G.

9. (8024) E. CINEREA Forst. Brown's Valley, 1 sp. June 23, 1927; Elk Point, 1 sp. June 12, 1925; Meckling, 2 sp. June 15, 1925; Springfield, 1 sp. June 16, 1926; White, 1 sp. Aug. 10, 1927; all by G.I.G.

10. (8032) E. CORVINA Lec. Grass Rope, 3 sp. Aug. 23, 1929, (G.I.G.); Hot Springs, 2 sp. Aug. 9, 1917.

11. (8033) E. PENNSYLVANICA DeG. Altamont, 9 sp. Sep. 5, 1930; Buffalo, 2 sp. Sep. 9, 1927; Canton, 2 sp. Aug. 16, 1927; Elk Point, 1 sp. Aug. 25, 1926; Englewood, 1 sp. Aug.

[4] The specimens labeled "Nowlin County" are from the Truman Collection and were probably taken in the early nineties. Nowlin County no longer exists but has long since been enlarged to form the present Haakon County.

30; 1924; Eureka, 9 sp. Sep. 5, 1930; Houghton, 2 sp. Sep. 5, 1930; Howell, 14 sp. Sep. 14, 1930; Lake City, 7 sp. Sep. 5, 1930; Lake Hendricks, 15 sp. Aug. 10, 1927; Lake Poinsett, 3 sp. Aug. 23, 1927; Letcher, 8 sp. Sep. 7, 1928; Lowry, 17 sp. Sep. 5, 1930; Miranda, 17 sp. Sep. 5, 1930; Mound City, 2 sp. Sep. 5, 1930; Smithwick, 1 sp. Sep. 15, 1930; Wewela, 11 sp. Sep. 16, 1930; White, 1 sp. Aug. 10, 1927; White Lake, 2 sp. Aug. 23, 1929; all by (G.I.G.). Brookings, 22 sp. Aug. 20, 1929; Capa, 2 sp. Aug. 24, 1922; White, 1 sp. July 26, 1922; all by H.C.S. Brookings, 1 sp. Aug. 4, 1929, by P.H.J., 4 sp. Aug. 3, 6, 8 and 27, 1928, all from white sweet clover (*Melilotus alba*) by M.K.R. and M.F., 5 sp. Aug. 3, 6, 8 and 21, 1928, all from yellow sweet clover (*Melilotus officinalis*) by M.K.R. and M.F. Springfield, 7 sp. June 15, 1930, by L.A.C. Forestburg, 1 sp. Aug. 21, 1929; Newell, 1 sp. Aug. 20, 1924; Pierre, 3 sp. Aug. 5, 1919; Sisseton, 1 sp. July 31, 1919, 1 sp. Aug. 29, 1921; Slim Buttes, 6 sp.; Yankton, 1 sp. Aug. 7, 1916; all no further data.

12. (8042) MACROBASIS UNICOLOR Kirby. Britton, 4 sp. July 10, 1927; Brown's Valley, 4 sp. June 23, 1927; Buffalo, 3 sp. June 20, 1925; Canton, 1 sp. June 12, 1926; Centerville, 1 sp. June 14, 1928; Chester, 2 sp. June 17, 1930; Meckling, 2 sp. June 13, 1925, 1 sp. June 16, 1926; Newell, 4 sp. July 5, 1925; Rapid City, 1 sp. June 25, 1923; Redfield, 2 sp. June 21, 1927; Tabor, 1 sp. June 20, 1924; Vermillion, 4 sp. June 11, 1921; Waubay, 1 sp. Aug. 29, 1927; all by (G.I.G.). Brookings, 1 sp. Apr. 29, 1919, 9 sp. June 13, 1911, 3 sp. on *Caragana* (Siberian Pea) June 16, 1930, 3 sp. June 21, 1918, 2 sp. July 17, 1924; Clover, 2 sp. June 18, 1929; Huron, 7 sp. June 7, 1928; Ludlow, 1 sp. June 1, 1928; all by H.C.S. Brookings, 13 sp. from yellow sweet clover (*Melilotus officinalis*) June 25 to July 23, 1928, 21 sp. from white sweet clover (*Melilotus alba*) July 7 to Aug. 8, 1928; all by M.K.R. and M.F. Colton, 2 sp. June 17, 1930; Eureka, 1 sp. June 25, 1930; Irene, 1 sp. June 17, 1930; Parmelee, 2 sp. June 20, 1930; all by L.A.C. Chester, 1 sp. June 29, 1930, (G.B.S.). Garden City, 3 sp. June 26, 1919; Meadow, 4 sp. June 21, 1921; Nowlin Co.,[4] 1 sp.; Pierre, 1 sp. June 21, 1928; all no further data.

13. (19616) M. MURINA Lec. Brown's Valley, 10 sp. June 23, 1927; Englewood, 1 sp. June 18, 1925; Florence, 1 sp. June 23, 1927; Lead, 2 sp. July 12, 1923; all by G.I.G. Brookings, 1 sp. June 12, 1923; White, 1 sp. July 1, 1925, all by H.C.S. Brookings, 6 sp. from yellow sweet clover (*Melilotus officinalis*) June 25 to Aug. 8, 1928, by M.K.R. and M.F.

14. (8053) M. IMMACULATA Say. Chamberlain, 2 sp. July 10, 1930, by H.C.S.; White River, July 14, 1930, 29 sp. found causing injury to garden vegetables (L.A.C.).

15. (8054) M. SEGMENTATA Say. Chamberlain, 9 sp. June 15, 1928; Grass Rope, 11 sp. June 19, 1929; Oglala (Bad Lands), 1 sp. June 20, 1928; Pierre, 1 sp. June 25, 1928, 6 sp. July 15, 1927; Wheeler Bridge, 1 sp. Aug. 20, 1927; Whitewood, 4 sp. June 21, 1926; all by (G.I.G.). Brookings, 1 sp. June 15, 1924; Chamberlain, 1 sp. July 15, 1930; White River, 2 sp. May 26, 1921; all by H.C.S. White River, 6 sp. found damaging garden vegetables June 14, 1930 (L.A.C.). Interior (Bad Lands), 4 sp. June 19, 1924; Slim Buttes, 6 sp.; no further data.

16. (8066) LYTTA NUTTALLI Say. Buffalo, 3 sp. June 20, 1925; Newell, 5 sp. June 29 and July 5, 1923; Sisseton Ind. Res. 1 sp. June 23, 1927; all by G.I.G. Brookings, 4 sp. July 2, 1924; Faulkton, 2 sp. July 10, 1922; all by H.C.S. Selby, 32 sp. July 20 to 30, 1927, by G.I.G., L.C.L. and J.A.S. Brookings, 3 sp. June 19, 1891; Leola, 4 sp. July 17, 1908, no further data.

17. (8075) L. BIGUTTATA Say. Nowlin Co.,[4] 3 sp., no data.

18. (8102) L. SPHAERICOLLIS Say. Buffalo, 7 sp. June 20, 1925, 2 sp. Aug. 26, 1924; Chamberlain, 2 sp. June 15, 1928; Grass Rope, 9 sp. June 15, 1929; Mobridge, 3 sp. Aug. 20, 1924; Mossman, 3 sp. July 14, 1928; Philip, 3 sp. June 23, 1923; Whitewood, 12 sp. July 18, 1923; all by G.I.G. Camp Crook, 1 sp. July 21, 1928 (H.C.S.). Hot Springs, 2 sp. June 22, 1930 (L.A.C.). Brookings, 2 sp.; Mobridge, 1 sp. July 20, 1930; no further data.

19. (8137) HENOUS CONFERTUS Say. Springfield, 1 sp. June 13, 1925; 1 sp. June 15, 1928; Yankton, 2 sp. Aug. 30, 1930; all by G.I.G. Yankton, 1 sp. Aug. 6, 1923 (H.C.S.).

20. (8148) MELOE AMERICANUS Leach. Canton, 1 sp. Aug. 27, 1923; 1 sp. Sep. 16, 1925; Custer, 1 sp. Sep. 11, 1927; Englewood, 1 sp. Sep. 14, 1930; Springfield, 1 sp. Aug. 27, 1926; all by G.I.G. Brookings, 2 sp. Oct. 15, 1924.

Subfamily NEMOGNATHINAE.

21. (8196) TRICRANIA STANSBURYI Haldeman. Two specimens labeled "South Dakota" were found in the former Truman Collection.

22. (8156) ZONITIS ATRIPENNIS Say. Hot Springs, 3 sp.; Volga, 3 sp.; no further data.

23. (8158) ZONITIS BILINEATA Say. Yankton, 1 sp. Aug. 6, 1923, (H.C.S.). Aurora Co., 3 sp., no further data.

24. (8168) GNATHIUM MINIMUM Say. Buffalo, 1 sp. Sep. 9, 1927; Martin, 1 sp. Sep. 3, 1924; all by G.I.G. Hot Springs, 1 sp.; Pierre, 14 sp.; Rapid City, 1 sp.; Volga, 1 sp.; no further data.

25. (8172) NEMOGNATHA LURIDA Lec. Newell, 1 sp. July

5, 1923, (G.I.G.). Brookings, 3 sp.; Nowlin Co.,[4] 5 sp.; Rapid City, 3 sp.; Volga, 4 sp.; no further data.

26. (8174) N. LUTEA Lec. Hot Springs, 2 sp. June 26, 1924; Newell, 1 sp. June 29, 1923; Rosebud, 2 sp. June 18, 1927; all by G.I.G. Wewela, 1 sp. June 19, 1930 (L.A.C.). Nowlin Co.,[4] 1 sp., no data.

27. (8175) N. BICOLOR Lec. Rapid City, 2 sp. no data.

28. (8178) N. PALLIATA Lec. Lake Oakwood, 1 sp. July 10, 1921 (H.C.S.). Brookings, 8 sp.; Volga, 3 sp.; no further data.

29. (8181) N. NIGRIPENNIS Lec. 5 sp. labeled "Western South Dakota" from the Truman Collection.

30. (8185) N. IMMACULATA Say. Aurora Co., 4 sp.; Hot Springs, 1 sp.; Nowlin Co.,[4] 4 sp.; Rapid City, 2 sp.; Volga, 2 sp.; no further data.

Relationships of the Gyrinidae (Coleoptera).

Part 19 of the *Catalogue of Indian Insects* (Calcutta: Government of India Central Publication Branch 1930, 37 pp.) is on the Gyrinoidea, by George Ochs of Frankfurt am Main. The following is taken from his Preface:

"The Gyrinidae are generally considered as a family of the sub-order Adephaga. They are indeed adephagid in some general characters, in other characters, however, they are abnormal and approach other families, which are far from the adephagous series. From this I concluded,[1] concerning their phylogenetic origin, that the Gyrinidae must be older than the true Adephaga, which opinion was already expressed by Lameere,[2] Fowler[3] and other authors. For this reason, it would perhaps be best, to consider the Gyrinidae as an isolated family, like for example the Palpicornia, with which they have probably some, though very distant, relations. Nevertheless, the nearest allies existing are the Adephaga, but if placed in this series, this requires a subdivision, and I feel inclined to follow the arrangement of Leng[4] and of Tillyard,[5] who unite the true Adephaga in a superfamily (Caraboidea) and consider the Gyrinoidea as a section of equivalent value. I cannot agree with Hatch,[6] who regards the Gyrinidea [Gyrinidae?] as simply derived from the Dytiscidae, and must therefore reject the arrangement of Handlirsch,[7] who unites the Gyrinidae with the aquatic families of the Adephaga in his Hydrocantharini."

[1] Ochs, Ent. Zeitschr. Frankf., XXXX: 122. 1926.
[2] Lameere, Ann. Soc. Ent. Belg., XLIV: 376. 1900.
[3] Fowler, Fauna Brit. Ind., Col.: 50. 1912.
[4] Leng, Cat. Col. N. Amer.: 26. 1920.
[5] Tillyard, Ins. of Austral. & N. Zeal.: 187. 1926.
[6] Hatch, Papers. Mich. Acad., V: 430. 1925.
[7] Handlirsch in Schroeder's Handb. der Entom., III: 550. 1925.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., FEBRUARY, 1931.

Entomology at the Convocation Week Meetings, December 29, 1930, to January 3, 1931.

Our annual summary of the entomological items of the programs of the eighty-seventh meeting of the American Association for the Advancement of Science and associated societies, held at Cleveland, Ohio, follows.

The number of papers listed by the various societies were:

Entomological Society of America	41
American Association of Economic Entomologists	88
American Society of Zoologists	20
Same, Genetics Section	8
Ecological Society of America	4
American Phytopathological Society	1
American Society of Parasitologists	5
American Society of Tropical Medicine	1
Phi Sigma Biological Research Society	10
Invited Papers on Hydrobiology and Agriculture (pages xliv-xlv of the General Program)	2
Total	180

These papers were distributed in subject as follows:

i

General Entomology	4
History of Entomology	1
Collecting, Mounting and Rearing Methods	5
Cytology	9
Anatomy	3
Physiology	28
Ecology	18
Geographical Distribution.	13
Ontogeny	7
Genetics	13
Parasites of Insects	4
Insects, etc., Affecting Man and Other Animals	8
Taxonomy	7
General Economic Entomology	4
Insecticides	10
Apiculture	3
Insects Affecting Cereals, Forage and Field Crops.	22
Do. Truck Crops	5
Do. Greenhouse Plants	2
Do. Fruits and Fruit Trees	17
Do. Household and Stored Products	5
Do. Forest & Shade Trees	7
Do. Carrying Plant Disease Germs	1

ii

Acarina	4
Pseudoscorpionida	1
Orthoptera	8
Mallophaga	1
Isoptera	3
Odonata	3

Ephemerida	1	Lepidoptera (excluding	
Homoptera	16	Codling Moth, Oriental	
Heteroptera	5	Peach Moth and Corn	
Coleoptera (excluding		Borers)	18
Japanese Beetle)	9	Codling Moth	3
Japanese Beetle	2	Oriental Peach Moth	1
Hymenoptera (excluding		Corn Borers	9
Honey Bee)	17	Diptera (excluding	
Honey Bee	5	*Drosophila*)	24
Trichoptera	1	*Drosophila*	6

Many of these figures are duplications, both between sections i and ii and also within each section.

In addition to the above papers there were exhibits of Pyrethrum flowers by Alfred Weed and of Mounting Coleoptera, especially Micros, by Henry Dietrich, in connection with the Entomological Society of America, and of the luminosity of butterfly wings by Austin H. Clark.

The Entomological Society of America, Dr. Edith M. Patch, *president,* Prof. J. J. Davis, *secretary,* met December 30 and 31. Thanks to Mr. J. A. G. Rehn, we present the following comment on the sessions. The attendance averaged from 80 to 100. Prof. C. T. Brues showed remarkable motion pictures of hot springs in action and several of masses of living brine fly larvae (Ephydridae); he touched upon naucorids and small water beetles forming part of the insect life of hot springs. Prof. J. G. Needham did not give his account of his airplane trip to the West Indies for dragonflies. Mr. C. H. Curran suggested more broadly and truly comprehensive monographs, new catalogs and more complete taxonomic descriptions. Dr. E. P. Felt proposed a system of letter symbols for placing insects, based on the Dewey library type. Miss Grace H. Griswold gave the length of adult life in the Webbing Clothes Moth (*Tinеola biselliella* Hum.) as 6-40 days in the female, 6-70 days in the male, the bulk of the individuals of the two sexes respectively living 23 and 43-53 days. Prof. H. B. Hungerford described his recent visit to the entomological museums of Upsala, Stockholm, Copenhagen, Kiel, Hamburg, Halle, Berlin, Berlin-Dahlem, Vienna, Buda-Pest, Paris, Brussels, Amsterdam, Oxford and London. Prof. H. Osborn gave notes on the work of Jared Potter Kirtland in Ohio. Prof. B. B. Fulton gave an analysis of the species of the cricket genus *Nemobius,* spoke of the application of previously unused male genital characters, described the anatomy of the genitalia of both sexes, discussed the physiological and ecological forms in several subspecies of *N. fasciatus* and illustrated typical habitats of various forms. Mr. J. W. Wilson described injury

to vegetables in Florida by *Tibicen davisi*. Mr. George S. Tulloch described the ditching done in Nantucket in 1930 to control mosquitoes as the first general major state project; the results were very satisfactory. Mr. F. H. Wilson gave the duration of the incubation period of the egg of *Lipeurus heterographus* as 6-7 days, 1st instar 6-12 days, 2nd instar 10-11 days, 3rd instar 12-14 days, adult (♂) 37, (♀) 38 days. Prof. R. H. Beamer stated that Brood IV of the Seventeen Year Cicada has been known in Kansas since 1825; it appeared in the eastern portion of the State in 1930, largely as the form *cassini*, probably localized to specific environments; he held *septendecim* and *cassini* to be clearly distinct species (*e.g.*, differences in number of eggs laid, in song) having in common only the periodic habit and occurrence in the same brood. Prof. C. L. Metcalf, by aid of very finely presented diagrams and charts, gave a summary of temperate and some tropical insects, ticks, mites and spiders that bite man; he omitted *Dermatobia*. Dr. N. E. McIndoo described the geotropic and phototropic responses of the Mexican Bean Beetle as well as those to various types of sprayed foliage after determination of preference to sour, bitter and sweet substances. Mr. C. E. Abbott spoke of the proboscis reflex of decapitated flies.

The annual public address of the Society was given on the evening of December 30 by Prof. H. J. Quayle, comprising an account of several trips to the Mediterranean area, southern Africa, Japan and Australia, studying the Mediterranean fruit fly problem.

At the business meeting, twenty-five dollars was voted to the *Zoological Record*. The Committee on the United States National Museum reported the acquisition of the Barnes collection of Lepidoptera by the museum. A committee on the Fifth International Congress of Entomology was authorized, the chairman to be appointed by the president. The new officers elected were president, J. W. Folsom; vice presidents, J. M. Swaine and Harold Morrison; J. J. Davis re-elected secretary-treasurer.

The annual address by the president of the American Association of Economic Entomologists, this year Mr. Franklin Sherman, was on Census Taking in Entomology, given on the morning of December 31.

The Entomologists' Dinner was on the evening of the same day. President Sherman presented Dr. W. E. Britton as toastmaster. Dr. W. J. Holland was the guest of honor. Addresses were made by Doctors Holland, Patch, Felt, Needham, Herbert Osborn, O'Kane, Vernon Kellogg, Lutz, Burgess and Arthur Gibson; about 300 attended.

Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual **volume,** and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

GENERAL.—Aurivillius, C.—Obituary. By L. R. N. [Norsk Ent. Tidsskrift] 2: 307-308. **Bibliographia** Zoologica. Volume 40. 472 pp. **Cockerell, T. D. A.**—The description and figuring of imperfect fossils. [68] 72: 654. **Gunn, N. R.**—The Norman R. Gunn collection of butterflies. By E. P. Van Duzee. [55] 7: 72. **de Joannis, J.**—Quelques éclaircissements à propos de la loi de priorité. [Lambillionea] 1930: 180-181. **Internationale** Kongres for Entomologi.—IV. [Norsk Ent. Tidsskrift] 2: 310-315. **McDonald, F. W.**—Memories of some Old London Entomologists. [Pro. So. Lond. Ent. & Nat. Hist. Soc.] 1929-30: 1-6. **Tillyard, R. J.**—A new theory of the evolution of the insects. [31] 126: 996-998.

ANATOMY, PHYSIOLOGY, ETC.—Brindley, T. A.—The growth and development of Ephestia kuehniella and Tribolium confusum under controlled conditions of temperature and relative humidity. [7] 23: 741-757, ill. **Bugnion, E.**—Les pièces buccales, le sac infrabuccal et le pharynx des fourmis. [Bull. Soc. R. Ent. Egypte] 1930: 85-204, ill. **Chudoba, S.**—Appareil centriolaire dans les cellules sexuelles males chez Dytiscus marginalis. [77] 105: 617-619, ill. **Dunham, W. E.**—Temperature gradient in the egg-laying activities of the queen bee. [43] 30: 403-410, ill. **Flanders, S. E.**—Wax secretion in the Rhizobiini. (Col.) [7] 23: 808-809, ill. **Howland, L. J.**—The nutrition of mosquito larvae, with special reference to their algal food. [22] 21: 431-440, ill. **Marcovitch & Stanley.**—The climatic limitations of the

Mexican bean beetle. [7] 23: 666-686, ill. **Mehta, D. R.**—Observations on the influence of temperature and humidity on the bionomics of Dysdercus cingulatus. [22] 21: 547-562, ill. **Misra, A. B.**—On the post-embryonic development of the female lac insect, Laccifer lacca (Coccidae). [22] 21: 455-467, ill. **Oekland, F.**—Studien ueber die arbeitsteilung und die teilung des arbeitsgebietes bei der roten waldameise (Formica rufa). [46] 20: 63-131, ill. **Paterson, N. F.**—The bionomics and morphology of the early stages of Paraphoedon tumidulus. (Phytophaga, Chrysomelidae). [93] 1930: 627-676, ill. **Pfeiffer & Stammer.**—Pathogenes leuchten bei insekten. [46] 20: 136-171, ill. **Portier, P.**—Respiration pendant le vol chez les lépidoptères. [69] 105: 760-764. **Poutiers, R.**—Influence de certains facteurs sur la nymphose des larves de Ceratitis capitata. [77] 105: 709-710. **Régnier & Lespes**—Sur l'existence d'une génération estivale chez le Criquet pèlerin (Schistocera gregaria). [69] 191: 1082-1083. **Reinig, W. F.**—Phaenoanalytische studien über rassenbildung. Psithyrus rupestris. [89] Syst. 60: 257-280, ill. **Zacher, F.**—Untersuchungen zur morphologie und biologie der samenkäfer (Bruchidae-Lariidae). [Arb. Biol. Reichs. f. Land- u. Forstw.] 18: 233-384, ill.

ARACHNIDA AND MYRIOPODA.—Brumpt, M. E.—Parasitisme latent de l'Ixodiphagus caucurtei chez les larves gorgées et les nymphes à jeun de divers ixodinés (Ixodes ricinus et Rhipicephalus sanguineus). [69] 191: 1085-1087. ***Ewing, H. E.**—A fossil arachnid from the lower carboniferous shales (Pocono formation) of Virginia. [7] 23: 641-643, ill. ***Jackson, A. R.**—Results of the Oxford University Expedition to Greenland, 1928. Aranee and Opiliones collected by Major R. W. G. Hingston; with some notes on Icelandic spiders. [75] 6: 639-656, ill.

THE SMALLER ORDERS OF INSECTS.—Borror, D. J.—Notes on the Odonata occurring in the vicinity of Silver Lake, Logan County, Ohio, from June 25 to September 1, 1930. [43] 30: 411-415. ***Hilton, W. A.**—Pauropoda from North America. [7] 23: 765-783, ill. **Jaffuel, P. F.**—Contribución al estudio de los Mecópteros. [44] 33: 537-549, ill. (S). ***Navas, R. P. L.**—Insectos Neotropicos. Algunos insectos de Chile. [44] 33: 17-24, 326-334, ill.

ORTHOPTERA.—Allard, H. A.—The occurrence of the crickets Anaxipha pulicaria and Cycloptilum trigonipalpum (Rehn and Hebard) in the vicinity of the District of Columbia, hitherto unreported here. [10] 32: 144-146. ***Chopard, L.**—Descriptions de Gryllides américains nouveaux. [44] 33: 522-531, ill. (S). ***Fulton, B. B.**—Notes on Oregon

orthoptera with descriptions of new species and races. [7] 23: 611-641. ***Sjöstedt, Y.**—Orthopterentypen im Naturhistorischen Reichmuseum zu Stockholm. I Mantidae. (S). [83] 21A, No. 32: 1-43, ill.

HEMIPTERA.—deLong, D. M.—Venational characters in Typhlocybinae wings. [43] 30: 398-402, ill. ***Knight, H. H.**—A new key to Paracalocoris with descriptions of eight new species (Miridae). [7] 23: 810-827. ***Osborn, H.**—North American leafhoppers of the Athysanella group (Cicadellidae). [7] 23: 687-720, ill. **Rivnay, E.**—Host selection and cannibalism in the bed bug Cimex lectularius. [7] 23: 758-764. ***Walley, G. S.**—Notes and descriptions of species of Arctocorixa from Ontario and Quebec (Corixidae). [4] 62: 280-286, ill.

LEPIDOPTERA.—*d'Almeida, R. F.—Etude sur le genre Terias. [44] 33: 421-427, ill. **Felt, E. P.**—The Norway maple Nepticula. [10] 32: 146-149. ***Gehlen, B.**—Neue Sphingiden. (S). [14] 44: 258-259, ill. **Hoffman, F.**—Beiträge zur Naturgeschichte brasilianischer schmetterlinge, I. [45] 25: 93-112. **Keifer, H. H.**—Argyresthias found in Golden Gate Park, San Francisco. [55] 7: 76. ***Michael, O.**—Neue Agrias-Ab. vom mittleren Amazonas. [14] 44: 273-277, cont., ill. ***Sternitsky, R. F.**—A new subspecies of Plebejus icariodes. [55] 7: 93-94.

DIPTERA.—*Alexander, C. P.—New species of crane flies from South America. Part. IV. (Tipulidae). [7] 23: 721-740. ***Alexander, C. P.**—New or little-known species of the genus Gnophomyia Osten Saken from Ecuador and Perú (Tipulidae). [44] 33: 164-168, ill. **de Andrade, E. N.**—Subsidios para a entomologia agricola Brasiliera. VIII. Pesquizas sobre a biologia da mosca da Madeira. Pantophthalmus pictus. [Arch. Ins. Biol., São Paulo] 3: 249-286, ill. **Andrews, H. W.**—The earlier stages of Diptera. [Pro. So. Lond. Ent. & Nat. Hist. Soc.] 1929-30: 17-29. ***da Costa Lima, A.**—Sobre especies do genero Miamyia subgenero Miamyia (Culicidae). [Mem. Inst. Oswaldo Cruz] 24: 187-194, ill. (S). **Curran, C. H.**—A new Gymnopternus from Oregon (Dolichopidae). [4] 62: 287. **Gibbins, E. G.**—A simple method of making permanent microscope mounts of mosquito larvae. [22] 21: 429-430, ill. **Leeson, H. S.**—Variations in the wing ornamentation of Anopheles funestus. [22] 21: 421-428, ill. ***Painter, R. H.**—Notes on some Bombyliidae from the Republic of Honduras. [7] 23: 793-807, ill. **Roberts, R. A.**—The wintering habits of muscoid flies in Iowa. [7] 23: 784-792. ***Seguy, E.**—Note sur quatre Toxophorines de l'Amerique centrale et meridionale. [44] 33:

532-536, ill. **Stuardo, C.**—Notas entomológicas un genero de Nemestrinidae no mencionado para la fauna chilena. [44] 33: 161-163, ill. ***Van Duzee, M. C.**—New Dolichopodidae from Connecticut. [40] 439: 5 pp. ***Webber, R. T.**—A revision of the N. A. Tachinid flies of the genus Achaetoneura. [50] 78 (10): 37 pp., ill.

COLEOPTERA.—*Arangua, E. V.—Contribuciones al estudio de los Cicindelidae. VI. Una nueva especie de Cicindela de Mexico. [44] 33: 504-506, ill. ***Carr, F. S.**—New Canadian Coleoptera. I. [4] 62: 278-279. ***Dallas, E. D.**—Ceroglossus Chilensis ab. Porteri, nov. ab. Sinopsis de la familia Karumiidae y nota sobre una especie sud-americana de la misma. [44] 33: 351-353, 386-394, ill. ***Fall, H. C.**—A new Aphodius and a new genus and species of Buprestidae from California. [55] 7: 73-76. ***Fisher, W. S.**—A new species of Chrysobothris infesting strawberry plants (Buprestidae). [10] 32: 149-152. ***da Fonseca, J. P.**—Uma nova especie do genero Coccotrypes Ipidae Cryphalinae. (S). [Arch. Ins. Biol., São Paulo] 3: 87-92, ill. **Hinton, H.**—Observations on two California beetles [55] 7: 94-95. ***Horn, W.**—Sur deux espèces nouvelles d'Odontochila néotropiques et quelques autres espèces rapprochées. [44] 33: 154-158, ill. **Joseph, H. C.**—El Pinotus torulosus. [44] 33: 31-46, ill. **Lever, R. J. A. W.**—Notes on nomenclature of some Neotropical Chrysomelidae with descriptions of two new species. [75] 6: 668-671, ill. ***Linsley, E. G.**—New Pogonocherus and Ecyrus (Cerambycidae) with notes concerning others. [55] 7: 77-90, ill. ***Martin, J. O.**—Two new coleopterous insects from Arizona. [55] 7: 70-72. **Melzer, J.**—Longicorneos do Brasil, novos ou pouco conhecidos (Cerambycidae). [Arch. Ins. Biol., São Paulo] 3: 187-208, ill. **d'Orchymont, A.**—Sur deux Palpicornia (Hydrophiloidea) chiliens appartenant à la famille des Hydraenidae. [44] 33: 96-102, ill. ***Pierce, W. D.**—Studies of the N. A. weevils belonging to the superfamily Platystomoidea. [50] 77 (17): 34 pp., ill. ***Ray, E.**—A study of South American Mordellidae. [Coleop. Contri.] 1: 161-172, ill. **Trägardh, I.**—Studies on the galleries of the bark-beetles. [22] 21: 469-480, ill. ***Uhmann, E.**—Amerikanische Hispinen aus den museen für Tierkunde und Völkerkunde zu Dresden. [48] 47: 149-155, ill. (S).

HYMENOPTERA.—*Alfken, J. D.—Wissenschaftliche ergebnisse der schwedischen entomologischen Reisen des Herrn. Dr. A. Roman 1914-15 und 1923-24 in Amazonas. Apidae. [83] 21A, No. 28: 1-16. **Bequaert, J.**—Ashmead's genus Polistella (Vespidae). [55] 7: 91-93. ***Borgmeier, T.**—Duas rainhas de Eciton e algumas outras Formigas Brasi-

leiras. [Arch. Ins. Biol., São Paulo] 3: 21-40, ill. **Frison, T. H.**—A contribution to the knowledge of the bionomics of Bremus americanorum. [7] 23: 644-665, ill. **Herbst, P.**—Sobre Caupolicana hirsuta. [44] 33: 65-73, ill. (S). ***Reed, E. P.**—Nuevo genero de avispas masáridas chilenas (Noticia preliminar). [44] 33: 507-510, ill. ***Santschi, F.**—Quelques fourmis de Cuba et du Brésil. [Bull. Soc. R. Ent. Egypte] 1930: 75-83. **Weld, L. H.**—Notes on types (Cynipidae). [10] 32: 137-144. ***Wilkinson, D. S.**—New Species and host records of Braconidae. [22] 21: 481-487, ill. (S).

Archilestes grandis (Ramb.) in Ohio (Odonata: Agrionidae).

The following is extracted, at the Editor's request, from a letter from the undersigned to Dr. F. M. Gaige, dated October 17, 1927.

"I was down at Oxford, Ohio, September 25, 1927, and had a most remarkable experience. There is a little brook which runs through the west side of the campus at the Western College, and which at its head is merely a draw. One branch of this draw goes back of some houses on the campus, and is apparently little more than a sewer; septic tanks are located on it. Another branch of the draw goes back into the Miami campus, and receives refuse liquids from the chemical laboratory and the power house. In fact, the crawfish farther down in the creek and still within the campus above the rustic bridge, were all dead so far as I could discover, though there were a few mayfly and stonefly larvae in the creek. Through the campus this little creek meanders among well-sodded knolls or rounded hills which are kept mowed with lawn mowers. At one place it is dammed to form a small pool, possibly an acre in extent. A driveway is built on the dam, forming this pool. Just above the pool is a little rustic foot-bridge over the creek. Here the creek is a foot or two wide and when I saw it two weeks ago and last Monday, there was a very small flow of water. The creek bed itself, just above the foot-bridge, is composed of broken up thin pieces of very fossiliferous limestone. There are a few small willows, mint, asters, and such vegetation on the creek, but it is practically entirely open and virtually landscaped—just a little artificial-looking dab of scenery. But when I walked down to it two weeks ago last Sunday, you can imagine my surprise when, just above the foot-bridge, I found *Archilestes grandis* flying. Can you imagine such a

thing? It is altogether the most surprising find I have ever made in collecting dragonflies. I collected four of them (3 ♂, 1 ♀) that day when I first found them and saw possibly a dozen more. Last Tuesday (October 11) I collected five more (4 ♂, 1 ♀) and saw several I did not disturb. Some were ovipositing, as far as I observed (and I made only three observations) in living twigs of willow and elm, and in dead twigs of sycamore. The twigs selected were from one foot to ten feet elevation, and in every case, over the water. In ovipositing they flew in couple, often alighting on twigs a little distance from above the water or even in trees or shrubs back from the creek bank, but in no case was oviposition observed in a situation from which the larvae would not fall directly into the water.

"The creek flows through the dam, forming the pool, in an arched cement culvert, and passes at once into an uncared for brush woodlot, much more shaded than above the rustic bridge. Here, just below the culvert, several *Archilestes* were seen on September 25, but, though I looked for them there on October 11, none were seen though they were in undiminished numbers just above the bridge."

At the time I visited Oxford I talked with a caretaker on the Western College campus who told me that in the sixteen years he had been there, he thought the creek had never been dry, and that in the winter it never froze but "steamed" all winter. He said the chemicals it carried killed all the gold fish, planted in the pool several times. On October 11th I visited several other small streams emptying into the same stream into which the campus creek flowed but found no *Archilestes* on any of them. On the campus stream the *Archilestes* flew along the creek, and occasionally breezed out over the adjacent lawn to a distance of maybe 50-100 feet from the stream, flying 2-3 feet high, and returning to the stream without alighting at any distance from it. Strange as it may seem, during such flights in the sun, out from the stream and back again, they somehow suggested a gomphine—that is at a distance, of course.

Archilestes grandis was associated on the creek with *Aeshna umbrosa*. At the pond on the same date (October 11) were *Sympetrum vicinum*, *Anax junius*, *Ischnura verticalis* and *Enallagma civile*. E. B. WILLIAMSON, Bluffton, Indiana.

Archilestes in Ohio (Odonata, Agrionidae).

Nymphs of the damselfly, *Archilestes*, (*A. grandis*?) have been found in pools about Dayton, Ohio. Heretofore the known range of this genus has been from Washington to California, except in one instance from Arkansas.

The record was verified by Dr. J. G. Needham.

CHARLES W. COTTERMAN, Dayton, Ohio.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Oxybelinae (Sphecidae, Hymenoptera)—Wanted from all parts of North and South America and West Indies. Will determine, exchange or purchase. V. S. L. Pate, Entomology Dept., Cornell University, Ithaca, N. Y.

Wanted—Names and addresses of collectors of insects, particularly Lepidoptera. Those from foreign countries especially invited. Will pay cash or exchange. Peter M. Casamento, P. O. Box 276, West New York, New Jersey.

Exchange—All groups of Lepidoptera in exchange for Noctuidae of the World. Foreign correspondence desired. A. Glenn Richards, Jr., Roberts Hall, Cornell Univ., Ithaca, N. Y., U. S. A.

Exchange—Lepidoptera of the Northwest for beautiful and showy exotics. C. W. Herr, Priest River, Idaho.

WANTED for cash or in exchange, hibernating pupae, especially Papilios, Saturniidae, Eacles imperialis, Autom. io and others from all parts of the States, Canada and Mexico. Send lists with best prices to Max Rothke, 1846 East Elm St., Scranton, Pa.

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